THE INFLUENCE OF INFLATION, CRUDE OIL PRICES, AND THE RAMADAN EFFECT ON STOCK RETURN

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ABSTRACT

This study aims to examine the effect of Inflation, Crude Oil Prices, and Ramadan Effect on Stock Return of manufacturing companies in Indonesia listed on the Indonesia Stock Exchange (IDX) during 2020. In this study, the sample selection technique used was purposive sampling with some predetermined criteria. This study shows that the independent variables in the form of Inflation and Crude Oil Prices have no effect on Stock Return. The other independent variable, Ramadan Effect shows a positive effect on Stock Return.

Keywords: *inflation, crude oil price, Ramadan effects, stock return*

1. INTRODUCTION

Today the investment world is experiencing very rapid development. Starting with the hectic public interest in the products circulating in the Indonesian capital market. According to Martalena and Malinda [1] the capital market is a place where there are buying and selling transactions of various kinds of financial instruments in circulation, for example there are debt securities (bonds), mutual funds, stocks, and various other instruments. One of the most popular capital market instruments is stock. Shares are letters of ownership of rights to part of the company's assets or what is more often referred to as capital ownership.

The rewards obtained by stock investors in companies that have gone public are dividends and capital gains. The main goal of investors investing is of course to get the highest possible profit or what we usually call "return". Capital gains owned by investors can generate maximum profits if the return generated by the shares owned is high, so investors of course expect the maximum return from the shares owned. The return owned by the stock is, of course, fluctuating because of many factors that affect the stock price in the market. Factors that affect stock prices can come from the company's own internal to come from external companies.

Several external factors that affect stock prices are macroeconomic fundamentals, fluctuations in the rupiah exchange rate, government policies, panic factors and the last factor is market manipulation. An example of macroeconomic fundamentals is the fluctuation of crude oil prices and inflation. In addition to the above factors, it is also believed that some countries with a majority Muslim population have additional external factors, namely the Ramadan Effect.

According to Ackley [2] Inflation is a continuous increase in prices of goods and services in general. One of the causes of inflation is the high public interest in a product or service so that the price of these goods increases, in accordance with the concept of demand (demand).

Crude oil or more often we refer to it as petroleum is one form of natural resource that is rare and non-renewable but is still in high demand by the public. As one of the countries with a high population of 273.5 million (2020), Indonesia's population is one of the reasons why the Indonesian government still imports petroleum to support community activities. Although Indonesia itself can produce oil for use by the Indonesian people, the oil produced by the government is not enough to support the activities of the Indonesian people due to the lack of national refinery capacity which is the main reason why Indonesia is still importing fuel from abroad. One way to encourage Indonesia to reduce the fuel import process is to encourage investment in the energy mining sector in Indonesia which is expected to strengthen the value of the rupiah which is expected to have an impact on stock returns invested by investors.

The Ramadan Effect is one of the calendar anomalies studied by several researchers which is believed to have an effect on investors' decisions when investing, especially in countries with a majority Muslim population. In one study, emotions and moods by Bagoezi et al. [3] suggested that the emotions and moods held by Muslim investors during the month of Ramadan are believed to influence the investment decisions taken

2. BACKGROUND

Arbitrage Pricing Theory. Arbitrage Pricing Theory is a valuation technique that can be used to determine the overall stock price using the concept of arbitrage. The concept of arbitrage is a way to profit from the difference in value that exists between two instrument markets or financial markets. This theory was put forward by Ross [4].

Adaptive Market Hypothesis. The Adaptive Market Hypothesis or commonly shortened to AMH, was first revealed by Lo [5], where the main function of this theory is as a mediator for the Efficient Market Hypothesis (EMH) theory and behavioral finance. In this theory, market participants will learn about the situation to get their necessities of life so that over time, they as market participants understand how the market works so that it can be useful to meet their needs. But as we know in the process of survival, things will happen that are beyond our control and even surprising, so that when such changes occur, the lessons learned will be completely useless because market participants cannot adapt themselves.

Definition of Stock Return. Fahmi and Yovi [6] say that stock returns are the profits obtained by companies, individuals and institutions from the results of their investment policies.

Definition of Inflation. Inflation is an event that shows an increase in prices in general and takes place continuously defined by M. Natsir [7]

Definition of Crude Oil Prices. Petroleum or more commonly known as crude oil is one of the natural resources that cannot be renewed by humans, causing scarcity.

Definition of Ramadan Effects. The month of Ramadan, also known as the holy month of Ramadan, is the month in which Muslims are obliged to fast during the holy month.

The Effect of Inflation on Stock Return. Based on the theory of Arbitrage Pricing Theory, it is known that inflation is one of the macroeconomic factors that affect the return of an asset. This happens because when a country experiences inflation, indirectly the value of the country's currency becomes small, a measure of how small the value of a country's currency

will decrease is based on how much inflation occurs. The greater the inflation, the lower the value of the currency owned. With inflation, it indirectly affects stock prices. The stock price will be lower because it adjusts the value of the country's currency so that it affects the returns owned by investors.

The Effect of Crude Oil Prices on Stock Return. The Arbitrage Pricing Theory explains that macroeconomic factors affect the return value of an asset, one of which is the price of crude oil. The high population growth in the world also supports the increasing use of this petroleum so that there are many exports and imports of this petroleum. Indonesia itself still imports crude oil from outside parties. By importing from other countries indirectly there is another thing we must pay attention to, namely foreign exchange rates. If the Indonesian currency weakens, this can cause inflation so that the price of oil becomes expensive. Rising inflation will affect stock prices so that investors' returns will also be affected.

The Effect of Ramadan on Stock Return. The Adaptive Market Hypothesis theory explains that investors can think rationally if the economic cycle is static and not surprising, but investors can also think irrationally if they are in a position that is pressed by some unexpected events. The month of Ramadan is a holy month in which all Muslims are obliged to carry out fasting activities to purify themselves, thereby creating a calmer and more positive mood or feeling. Mood changes are believed to influence investment decisions. However, the Ramadan Effect is also included in the calendar anomaly so that this condition cannot be called a normal condition but cannot be called a surprising event because it occurs every year.

Based on the explanation of the framework that has been described by the author, the hypothesis for this research can be described as follows:
Ha1: There is a negative effect of Inflation on Stock Return.
Ha2: There is a negative effect of Crude Oil Price on Stock Return.
Ha3: There is a positive effect of Ramadan Effect on Stock Return.

3. METHODS

In this study, the type of research design that will be used is descriptive research design and uses quantitative data. The sampling criteria are as follows: 1) Manufacturing companies located in Indonesia and listed on the IDX [8] in 2020. 2) Company data in the form of stock closing prices during the study period. 3) Companies that are not delisted, suspended and IPO during the research period. 4) Companies that are not affected by cases (bankruptcy or unfair transaction events) or tax sanctions during the research period. The data used to measure inflation was obtained from Bank Indonesia data [9] , for oil price data obtained from the investing.com [10] site and to determine the Ramadan effect data obtained from the al-habib.com [11] website. Operational research variables are a nature or value of objects or activities that have certain variations that have been determined by the researcher to be investigated and in the end conclusions will be drawn from the object or activity under study. The operational variables used in this study are the dependent variable (Y) and the independent variable (X). Here is a summary of Variable Operationalization:

Table 1 Variable Operations

Variable	Measurement	Scale	Source

Stock Return	$R_{x=}P_X - P_{X-1}$	Ratio	Ashraf S. Hijazi and Mosab I. Tabash [12]
Inflation	Daily inflation rate	Ratio	Antasari Wandi Sanyota and Akbar Masithah [13]
Crude Oil Price	Daily Crude Oil Prices	Ratio	Yoedy Yuswandy [14]
Ramadan Effects	$RME = \dfrac{PX - PX-1}{n}$	Ratio	Ashraf S. Hijazi and Mosdab I. Tabash

The data analysis method used in this study is descriptive statistical test, multiple linear regression, hypothesis testing which is divided into two, namely the T test and F test, and the R square (R^2) test. All data obtained will be processed using Microsoft Excel and SPSS programs. Multiple regression analysis is a form of linear analysis in which the dependent variable must have more than one.

$$Y = \alpha + \beta1\ X1 + \beta2\ X2 + \beta3\ X3 + e$$

Description:
Y   = The dependent variable or response variable
X1   = Inflation
X2   = Crude Oil Price
X3   = *Ramadan Effects*
α   = constant
β   = Regression Coefficient

4. RESULTS

This study was conducted to examine the effect of Inflation, Crude Oil Prices and Ramadan Effects on Stock Return. The population or subjects used in this study are manufacturing companies in Indonesia and listed on the IDX in 2020. The total population used in this study is 155 companies. The sample used in this study was collected by the Non-Probability Sampling method with the Purposive Sampling technique.

Table 2 Descriptive Statistics

Descriptive Statistics					
Description	N	Minimum	Maximum	Mean	Std. Deviation
Inflation	30	.0219	.0267	.023020	.0020649
Crude Oil Price	30	.00	36.06	20.4430	14.23251

Ramadan Effects	30	.0000	1,732.9484	957.440215	851.6776178
Stock Return	30	-1,732.9484	1,701.5548	-56.320645	1,037.3923920
Valid N (listwise)	30				

Based on the results of descriptive statistical tests, inflation data shows a mean value of 0.23020 or 2.3%, which explains that the average value of inflation in this study is 2.3% with a standard deviation of 0.020649. The maximum value in the inflation data held is 0.267 or 2.67%. Meanwhile, the minimum value obtained from this data is 0.219 or 2.19%. From the data, it can be concluded that in the research period the highest inflation rate was at 2.19% and the lowest inflation rate was at 2.19%.

Crude Oil Prices in the descriptive statistical test explain that the average value owned is 20.4430, which explains that in the research period the mean value is Rp. 20.4430 with a standard deviation of 14.23251. The maximum value owned by Petroleum Prices is 36.06 or Rp. 36.06. The minimum value in the research period that is owned is .00 or Rp. 00, which is due to the absence of data on holidays and Saturdays and Sundays.

Ramadan Effects in the descriptive statistical test shows the mean value at 957.440215 or Rp.957.440215 with a standard deviation of 851.6776178. The maximum value obtained is 1732.9484 or Rp.1732.9484. The minimum value obtained is .0000 or Rp.0000, this is due to the absence of stock closing price data on holidays and Saturdays and Sundays.

Stock return on descriptive statistical test shows a mean value of -56.320645 which indicates that during the study period, the average stock return per day of 155 manufacturing companies is -Rp. 56.320645 per 1 share with a standard deviation of 1037,3923920. The maximum value is 1,701.5548 which indicates that the highest stock return value is Rp. 1,701.5548 per 1 share. The minimum value is -1,732.9484 which indicates that the lowest stock return value during the research period is -Rp.1,732.9484, this is due to the daily data that is worth 0 so that when entered into the proxy the closing price of the stock becomes negative.

Multiple Linear Regression Analysis Results.
The multiple linear regression equations formed in this study are:

$$Y = 1{,}432.519 - 87{,}094.023 \, X1 - 24.410 \, X2 + 1.060 \, X3$$

Based on the regression equation above, it can be seen that the constant value is 1,432.519, so it can be stated that the Stock Return value is 1,432.519 if Inflation, Crude Oil Prices, and Ramadan Effects are 0 or constant.

Based on the regression equation, it can be seen that the value for Inflation (X1) is -87,094.023 so it can be concluded that the Stock Return value will experience a change of -87,094.023 for every increase of one unit of X1 (Inflation) with the assumption that other variables, namely Crude Oil Prices and Ramadan Effects are constant.

Based on the regression equation, it can be seen that the value for Crude Oil Price (X2) is -24.410 so that it can be concluded that the Stock Return value will change -24.410 for every

increase of one unit of X2 (Petroleum Price) with the assumption that other variables are Inflation and Ramadan Effects. is constant.

Based on the regression equation, it can be seen that the value for Ramadan Effects (X3) is 1.060, so it can be concluded that the Stock Return value will change 1.060 for every increase of one unit of X3 (Ramadan Effects) with the assumption that other variables, namely Inflation and Oil Prices are constant.

Table 3 Coefficient of Determination Test Results (R^2)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.663[a]	.439	.374	820.5181877
a. Predictors: (Constant), X3_RME, X1_IHK, X2_HMB				
b. Dependent Variable: Y_RETURN				

The results of the Adjusted R Square test are 0.374 or equal to 37.4%, so it can be concluded that the dependent variable (Stock Return) in this study can be explained by a value of 37.4% by the independent variables in this study, namely Inflation, Crude Oil Prices and Ramadan Effects. the remaining 62.6% can be explained by other variables that are not in this study.

Table 4 F-Test Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13,704,803.772	3	4,568,267.924	6.785	.002[b]
	Residual	17,504,502.504	26	673,250.096		
	Total	31,209,306.276	29			
a. Dependent Variable: Y_RETURN						
b. Predictors: (Constant), X3_RME, X1_IHK, X2_HMB						

The result of the F value in this study is 6.785 and the coefficient value is sig. is 0.002. The significance level used in this study is 0.05 or 5%, so that when compared with the coefficient value of sig. in the table above, it can be explained that the coefficient value of sig. lower than the level of significance used in this study so it can be concluded that Inflation, Oil Prices, and Ramadan Effects can simultaneously affect Stock Return.

Table 5 t-Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,432.519	1,934.629		.740	.466
	Inflation	-87,094.023	81,889.864	-.173	-1.064	.297
	Crude Oil Price	-24.410	15.726	-.335	-1.552	.133
	Ramadan Effects	1.060	.262	.870	4.051	.000
a. Dependent Variable: Y_RETURN						

The result of the t test for the inflation variable is 0.297 with a t value of -1.064. The significance level used in this study is 0.05 or 5%, so that when compared with the coefficient value of sig. in the table that shows the value of Sig. Inflation, then the value of Sig. Inflation is higher than the used significance level. This explains that inflation does not have a significant effect on Stock Return.

The results of the T test for the Crude Oil Price variable are 0.133 with a t value of -1.552. The significance level used in this study is 0.05 or 5%, so that when compared with the coefficient value of sig. in the table that shows the value of Sig. Oil Prices, then the value of Sig. Oil prices are higher than the significance level used. This explains that the price of crude oil does not have a significant effect on stock returns.

The result of the T test for the Ramadan Effects variable is 0.000 with a t value of 4.051. The significance level used in this study is 0.05 or 5%, so that when compared with the coefficient value of sig. in the table that shows the value of Sig. Ramadan Effects, then the value of Sig. Ramadan Effects is lower than the significance level used. This explains that the Ramadan Effects have a significant effect on Stock Return.

Table 6 EViews Result

Dependent Variable: Y_RETURN				
Method: Least Squares				
Date: 02/24/22 Time: 14:08				
Sample (Adjusted): 1930M01 1932M06				
Included observations: 30 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1,432.519	1,934.629	0.740462	0.4657
X1_IHK	-87,094.02	81,889.86	-1.063551	0.2973
X2_HMB	-24.4099	15.72583	-1.552217	0.1327
X3_RME	1.060198	0.261720	4.050885	0.0004
R-squared	0.439126	Mean dependent var		-56.32065
Adjusted R-Squared	0.374409	S.D. dependent var		1,037.392
S.E. of regression	820.5182	Akaike info criterion		16.38132
Sum squared residuals	17,504,503	Schwarz criterion		16.56814
Log likelihood	-241.7197	Hannan-Quinn criter		16.44108
F-statistics	6.785395	Durbin-Watson Stat		1.964296
Prob (F-statistics)	0.001573			

The Result of EViews Programs are as follows:

T-Test

Inflation variable is 0.297 with a t value of -1.064 that can conclude that inflation does not have a significant effect on Stock Return. Crude Oil Price variable are 0.133 with a t value of -1.552. This explains that the price of crude oil does not have a significant effect on stock

returns. The result of the T test for the Ramadan Effects variable is 0.000 with a t value of 4.051. This explains that the Ramadan Effects have a significant effect on Stock Return.

F-Test

The result of the F value in this study is 6.785 and the coefficient value is sig. is 0.002. The significance level used in this study is 0.05 or 5%, so that when compared with the coefficient value of sig. in the table above, it can be explained that the coefficient value of sig. lower than the level of significance used in this study so it can be concluded that Inflation, Oil Prices and Ramadan Effects can simultaneously affect Stock Return.

Multiple Linear Regression Analysis

The multiple linear regression equations formed in this study are:

$$Y = 1{,}432.519 - 87{,}094.023\ X1 - 24.410\ X2 + 1.060\ X3$$

Coefficient of Determination Test(R^2)

The results of the Adjusted R Square test are 0.374 or equal to 37.4%, so it can be concluded that the dependent variable (Stock Return) in this study can be explained by a value of 37.4% by the independent variables in this study, namely Inflation, Crude Oil Prices, and Ramadan Effects. the remaining 62.6% can be explained by other variables that are not in this study.

5. CONCLUSION

The purpose of the research conducted by the researcher is to test whether the independent variables tested, namely Inflation, Crude Oil Prices and Ramadan Effects have an influence on the dependent variable, Stock Return. In this study, the population used by the researcher is a manufacturing company located in Indonesia and listed on the IDX in 2020. The total population used by the researcher to conduct this research is 173 manufacturing companies. Based on the criteria determined by the author, the manufacturing companies can be filtered into 155 companies. Based on the results that have been processed, some conclusions can be summarized as follows:

Inflation variable has no significant effect on Stock Return. With this explanation, it can be explained that the inflation hypothesis has a negative effect on Stock Return (Ha1) is rejected. This research is contrary to previous research, namely research researched by Kwofie, Charles & Ansah, Richard Kwame [15] which has research results showing that inflation has a significant relationship with GSE Stock Market Return and other researchers, namely Chandra, Kristian [16], which also shows that inflation has a significant relationship with stock returns.

Crude Oil Price variable has no significant effect on Stock Return. This explains that the Ha2 hypothesis, namely, there is a positive influence on the price of crude oil on stock returns is rejected. This research contradicts the research that has been done by previous researchers, namely Dutta, P., Noor, M.H. & Dutta, A., [17] which has research results that Petroleum Prices have a significant relationship with Stock Market Return.

Ramadan Effects variable has a significant effect on Stock Return. This explains that the Ramadan Effects hypothesis has an influence on the accepted Stock Return. This research is supported by previous studies, namely, Munusamy, D, [18] which found that Ramadan has a significant relationship with Stock Market Return and Volatility, and (Ashraf S. Hijazi and Mosab I. Tabash, 2020) who found that Ramadan month has a significant positive effect on Stock Return.

This research also has limitations which can be developed by further researchers. The limitations of this study are: 1) The independent variables used in this study are only limited to 3 variables, namely, Inflation, Crude Oil Prices and Ramadan Effects. 2) The research period in this study is only 2020. 3) In this study, the sample used was only manufacturing companies, so it cannot be generalized to other industrial companies.

Based on the explanation of the limitations in this study, it is hoped that this research can be developed in further research. Some suggestions for further research are: 1) Adding several other independent variables that can affect the dependent variable (Stock Return), such as interest rates, exchange rates, investor sentiment and others. 2) The research period is longer, so it is not limited to the 2020 period. 3) In future research, it is expected to conduct tests on non-manufacturing companies such as the mining industry.

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REFERENCES

[1] Martalena, dan Malinda, Pengantar Pasar Modal, Edisi Pertama, Yogyakarta: Andi, 2011.

[2] G. Ackley and S. B. Joedano, *Teori Ekonomi Makro*. Jakarta: Yayasan Penerbit Universitas Indonesia, 1973.

[3] R. P. Bagozzi, M. Gopinath, and P. U. Nyer, "The role of emotions in marketing," *Journal of the Academy of Marketing Science*, vol. 27, no. 2, pp. 184–206, 1999. https://doi.org/10.1177/0092070399272005

[4] E. I. Siregar and D., "The impact of political risk and macroeconomics on stock return at Indonesia Stock Exchange (an approach of Arbitrage pricing theory (APT))," *KnE Social Sciences*, 2019. https://doi.org/10.18502/kss.v3i26.5412

[5] A. W. Lo, *Adaptive markets hypothesis: Market efficiency from an evolutionary perspective*. Cambridge, MA: MIT Sloan School of Management, 2004.

[6] Irham Fahmi & Yovi L Hadi, *Teori Portofolio dan Analisis Investasi.* Bandung: Alfabeta, 2009.

[7] Natsir, M, *Ekonomi Moneter dan Perbankan Sentral*. Jakarta: Mitra Wacana Media, 2014

[8] "PT Bursa Efek Indonesia - indonesia stock exchange." [Online]. Available: https://www.idx.co.id/.

[9] Bank Indonesia. [Online]. Available: http://www.bi.go.id/.

[10] "Stock market quotes & financial news," *Investing.com*. [Online]. Available: http://www.investing.com/.

[11] H. bin Hilal, "Alhabib web service: Coloring with Islam," *Alhabib Islamic Web Service RSS*, 05-Apr-2021. [Online]. Available: http://www.al-habib.info/.

[12] A. S. Hijazi and M. I. Tabash, "The impact of Ramadan month on market stock returns anomalies: An empirical investigation of palestine exchange (PEX)," *Investment Management and Financial Innovations*, vol. 17, no. 1, pp. 253–265, 2020. http://dx.doi.org/10.21511/imfi.17(1).2020.22

[13] Wandi Sanyota Antasari, Masithah Akbar, "Analisis Pengaruh Fluktuasi Nilai Tukar (Kurs), Inflasi dan BI Rate Terhadap Harga Saham pada Sektor Consumer Good Industry Go Public," *Jurnal Manajemen dan Akuntansi*, Vol. 20, no. 2, 2019. http://journal.stiei-kayutangi-bjm.ac.id/ index.php/jibk/.

[14] Alianty, H, "Pengaruh Inflasi, Nilai Tukar Rupiah (Kurs Tengah BI), PDB, Harga Emas Dunia dan Harga Minyak Mentah Dunia IHSG Periode 2009-2014," *Jurnal Eksekutif*, Vol. 13, No. 2, 2016. https://jurnal.ibmt.ac.id/index.php/jeksekutif/article/view/123

[15] C. Kwofie and R. K. Ansah, "A study of the effect of inflation and exchange rate on stock market returns in Ghana," *International Journal of Mathematics and Mathematical Sciences*, vol. 2018, pp. 1–8, 2018. https://doi.org/10.1155/2018/7016792

[16] K. Chandra, "The effect of inflation levels and oil prices on stock return food and Beverage," *Business and Entrepreneurial Review*, vol. 17, no. 2, p. 135, 2019. http://dx.doi.org/10.25105/ber.v17i1.5192

[17] M. H. Noor and A. Dutta, "On the relationship between oil and equity markets: Evidence from South Asia," *International Journal of Managerial Finance*, vol. 13, no. 3, pp. 287–303, 2017. https://doi.org/10.1108/IJMF-04-2016-0064

[18] D. Munusamy, "Does ramadan influence the returns and volatility? evidence from shariah index in India," *Journal of Islamic Accounting and Business Research*, vol. 10, no. 4, pp. 565–579, 2019. https://doi.org/10.1108/JIABR-03-2016-0025